has entailed two kinds of change: where possible, the organism has sought to mold and manage the environment; but where the environment has been too rigid, organisms have been content to adjust to situational demands. Any adequate account of human evolution must include both processes. The single most predominant and rigid environmental condition that vertebrates have had to face is scarcity. Because scarcity could not be altered, survival was constantly in doubt, a situation that eventually forced adjustive qualities into play in the form of efficient motivation. Thus, vertebrates evolved stable, permanent, genetically transferable and automatic mechanisms called needs which allow the organism to increase its efficiency by increasing its capacity to identify values, to terminate activity when the biologically necessary levels of values had been consumed, and to initiate activity only when a particular value was required again.

Scarcity and variable, natural distributions of values produced another mechanism for efficiency: territoriality. In its purest sense, territoriality is a technique for adjusting population to the supply of values

by controlling procreation.[8] When values are abundant, the size of territorial units decreases, which means that more males may possess territory. Since only males with territory mate, abundance leads to population increases. As population outruns values, the size of territorial units increases, fewer males possess territory, fewer males mate, and population declines. The concept of territory among lower vertebrates gives rise to the idea of property in man. Thus, because all values are owned or claimed, the acquisition of values to meet needs depends upon exchange. Efficiency applied to exchange leads also to a universal set of psychological laws which guide all exchange behavior. The Laws of Human Exchange have to do with efficiently acquiring values at a profit.

Value motivation and agglutinated value distributions produce a kind of magnetic field which draws human beings together in aggregations and groups. Again, efficiency demands that needs be aggregated in a way that best fits the natural or contrived agglutination of values.

---

[8]F. A. Pitelka, P. Q. Tomich, and G. W. Treichel, "Ecological Relations of Jaegers and Owls as Lemming Predators Near Barrow, Alaska," Ecological Monographs, XXV (1955), 85-117.

Thus, groups are efficient means of aggregating needs, values and productive energy. Aggregation, in turn, provides opportunity for intensive exchange of values in a way that produces learned behavior. In effect, learning is a function of aggregation and exchange. Without these two conditions, society would be impossible. Learning operates according to the Laws of Human Exchange, and may therefore be considered an efficient means of preserving efficient behavior (i.e., behavior that maximizes rewards). Finally, those major components of behavior which benefit the organism and society most become the basis for a functionally organized personality.

Motivation

All human operant activity (and some respondent activity) is motivated by a desire to acquire values. At first glance, this proposition appears to be patently Aristotelian because it conceptualizes "purpose" as a major force in the elicitation of human activity. There is at least superficial resemblance to the idea of telos, with one critical difference: the Aristotelian telos represents the only determinant of behavior, while in our epistemological formulation, the intent of an organism

may have almost nothing to do with final behavioral outcomes, especially when those outcomes are defined in terms of the values acquired. Whether or not an organism actually gets a desired value is contingent upon a broad range of environmental conditions. In effect, man proposes by seeking a particular value, but the environment (including other men) disposes by either facilitating or retarding the activity emitted to acquire the value. Value acquisition, as a focus of investigation, is a function of the conjunction of stimuli, some of which originate in the organism in the form of energizing needs and the rest of which originate in the environment. The range of values that may become an object of activity is limited only to the distribution of human preferences and available values. No value is, in an epistemological sense, more important than any other. Statistically, of course, every social system will have a value hierarchy, identifying those values which are both most and least preferred. As Homans has put the matter, "some men find some of the damnedest things valuable--or so it seems to the rest of us."[9]

---

[9]George C. Homans, Social Behavior: Its Elementary Forms (New York: Harcourt, Brace and World, 1961), p. 45.

Values may range from "capital gains" to "eternal salvation." What is universal to man is not necessarily interest in a particular set of values, but simply that he is motivated to acquire them. The proposition is hardly novel. Thucydides, for example, thought human behavior was caused primarily by asphaleia (security), doxa and time (prestige and honor) and ophelia and kerdos (wealth and material well-being).[10] Harold Lasswell, in his classic Politics: Who Gets What, When, How? advanced the hypothesis that

> man
> pursues values
> on resources
> through institutions.[11]

Among his "representative values" are found income, deference and safety, each of which bears a strong resemblance to those basic impulses identified by Thucydides. Practically every political theorist between Thucydides and Lasswell has had a theory of motivation based on the assumption that men seek values.

---

[10]Thucydides, The Peloponnesian Wars (New York: Modern Library, 1951).

[11]Harold Lasswell, Politics: Who Gets What, When, How? (New York: Meridian, 1960), p. 208.

Skinner's Critique

Questions of motivation attempt to enlarge the dimensions of science from description and prediction to explanation. Psychology, which is the real home of motivational research, handles the problem in two ways: one general school takes motivation as given and attempts to introduce it as a variable in both theory and research; the other school, the Skinnerians, reject it entirely. Skinner raises a number of critical objections to motivation:

1) Motives are inner states that cannot be directly observed or measured,

2) thus, all motivational research depends upon inference from overt behavior,

3) motivation is the least parsimonious of all approaches because the dynamics of the motivational process are always complex, often beyond comprehension,

4) motivation is irrelevant to a science of human behavior because the goal of science is prediction,

5) even as explanations of behavior, motivation is insufficient because it often leads the researcher away

from an examination of the crucial environmental determinants of behavior.[12]

Few candid social scientists reject Skinner's critique; none find it fatal. Prior to the invention of the electronic microscope, for example, the existence of the atom was inferred from theory and from tracings left in cloud chambers. Even now, several atomic microparticles must be inferred because they do not "live" long enough to be observed. Many social scientists think that attitudes expressed verbally in the form "I want," or "I hope" are cognitive tracings of motives. No one expects that a researcher will one day discover a "living, breathing" need or drive; but far from implying that the study of motivation is meaningless, this empirical limitation merely indicates that there will always be less certainty about the accuracy of motivational theory than there is about physical theory. The real test should be how well motivation explains the action of particular variables in the calculus of human behavior. The question of parsimony also depends exclusively upon what one is trying to discover.

---

[12]B. F. Skinner, Science and Human Behavior (New York: MacMillan, 1953), Chapter 1.

If one includes needs and drives as variables in the investigation of the dynamics of the micropersonality, then the inner dynamics of motivational development and operation are critical. On the other hand, if one's interests lie only in the area of transactions between organisms, the dynamics of motivation may be irrelevant. The question of the goals of science can be answered in roughly the same manner: they depend upon the questions asked of reality. Where the questions are who, what, when, the goal is description; where it is how, prediction; where it is why, explanation. Each goal is as legitimate as any other, although it should be obvious that prediction is a condition of explanation and that description is a condition of both prediction and explanation. In effect, there exists an ideal sequence from description to prediction to explanation. That researchers are led to ignore the importance of the environment in the calculus of behavior is regrettable, but hardly the fault of motivational theory <u>per se</u>. It may more properly be laid at the doorstep of the Aristotelian epistemology. Any concern for motivation that emerges from a Galileian approach to knowledge will automatically include a healthy number of environmental variables.

One suspects that the Skinnerian rejection of motivation is a way of protecting an ideological commitment to simple determinism. If men have motives, they are capable of selecting alternatives, and, consequently, are capable of controlling environmental stimuli. Galileian motivation does not imply "free will," but it does allow man a considerable degree of control over his own operations on the environment. The structure of the personality and its content are, of course, not matters of free choice--the personality is, in a direct sense, determined by its environment. But, what a particular personality does with informational stimuli, how it responds to peculiar configurations of stimuli, what operants it emits under various conditions of motivation, these are mostly indeterminant. They can be understood, and, to a limited degree, they can be predicted, but the number of variables involved in the calculus of behavior may be so enormous that existing research techniques cannot handle them simultaneously. The structure and content of the personality are determined; how the personality operates and responds in concrete situations is indeterminant and problematic.

Possibly the most serious objection that can be raised in response to the Skinnerian rejection of motivation

is that it undermines the central assumption of Skinnerian psychology: namely, that in experiments with rats and pigeons, the psychologist is controlling the behavior of the experimental animal. Employing the constrained Skinnerian methodology which limits the interpretation of activity to observables, it would be impossible to assign the value "independent variable" to the psychologist's operations and "dependent variable" to the experimental animal's responses. It is only on the basis of knowledge of the motivation of rats and men that we can interpret the interaction or transaction between the psychologist and the experimental animal as a control relationship with the experimental animal on the short end. Without this knowledge, it is just as plausible to assert that the experimental animal is controlling the psychologist. We know this is nonsense only on the basis of information about the psychologist's intent or motivation. It seems clear that while rejecting motivational analysis at an ideological level, the Skinnerians are at least implicit believers.

Motivational Structure, Operation and Acquisition

Motivation implies the connection of a need or a drive with a value; when we say X is motivated by P, we

mean that X has an interest in acquiring P to meet a need. The term motivation implies a dynamic set of interrelationships between constructs, and in order to more fully comprehend the dynamics, the following constructs must be defined: need, desire, motive. A

need df a relatively permanent biological and emotional requirement of the organism having two states: deprivation and satiation. Relatively continuous satiation of a need is integrally linked to the physical and emotional well-being of the organism. Intermittent deprivation of a need is capable of generating value acquisition activity along physical and social vectors.

desire df the projected or expected satiation of a need by a value.

motive df an efficient cognitive technique for strategically aggregating a large number of needs into a smaller number of units of available activity.

The dynamic interrelations between needs, motives, desires and activities is the subject of motivation.

We set for our theory of motivation three modest tasks: (a) to explain how and why people follow recurrent patterns of activity, (b) how and why they change from one

activity to another and (c) how a large number of needs within the organism can be met by a small number of role-oriented activities within a social system. Our primary assumption is that the energizing force behind all activity is tension, and further, that tension has three independent sources in fully developed humans: biological, neurological and emotional. Biogenic and neurogenic needs are common to all forms of life, including newborn infants, but emotional needs are generic to socialized primates and are especially prominent in man. The notion of intake and metabolism of physical values such as food, water and oxygen is the paradigmic beginning point for elucidation of the dynamic elements of the motivational system. Thus

> metabolism df a change in a biological need from a state of satiation to a state of deprivation through the continuous processes of anabolism and catabolism.[13]

The inner dynamic of metabolism has the following sequence:

1) Catabolism, or the breakdown of cells, deprives the organism of energy;

---

[13]Anton Carlson and Victor Johnson, The Machinery of the Body (Chicago: University of Chicago Press, 1956), pp. 48-61.

2) deprivation produces or increases somatic tension, induced by chemical change in the cellular system;

3) the heightened tension is interpreted by the brain as a demand for the emission of an appropriate value acquisition operant;

4) if the activity generated leads to acquisition of an appropriate value, the process of anabolism increases energy and tension falls with somatic relaxation;

5) acquisition of the value or reduction of tension after consumption triggers a cessation of activity.

This is the basic, simplified process through which all organisms maintain a supply of internal energy sufficient for survival. Man is apart from other organisms, however, in the degree of control he can exercise over himself and the environment. Human beings can symbolize, think and formulate expectations, making it possible to terminate activity prior to anabolism and initiate activity without the impetus of catabolism. For example, if a hungry man <u>knows</u> that food is available for consumption any time he chooses to eat, he can voluntarily postpone eating, even when extremely hungry. If he were unable to anticipate satiation of his hunger need, his control over his food search activity would be practically nil. Nor are

his food acquisition operants exclusively dependent upon the tension produced by catabolism; in fact, much human activity is oriented toward the cognitive anticipation of need, and the acquisition and storage of values before they are actually needed. Man's cognitive and discriminatory capacity undoubtedly enables him to bypass this costly time factor of translating deprivation into tension and energy into relaxation. In short, he does not need to be hungry before he eats or to stop eating when he is "satiated." Within broad limits, he can initiate and terminate activity whenever he chooses.

The existence of fixed, innate, biogenic and neurogenic needs explains why men engage in recurrent activities. Each biogenic need is affected by metabolism, in which values previously acquired are eventually consumed. Survival thus depends on re-supplying these values continually. But how are we to account for a recurring interest in emotional sentiments such as friendship, affection, love, recognition, approval, prestige, and the many other values that have more than a bare physical significance for man? Metabolism could be generalized to emotional needs and sentiments only at the risk of absurdity. How are neurogenic and emotional needs to be understood? Let us assume,

as a first approximation, that tension is of two distinct types: (a) continuous, relatively stable neurogenic and emotional tension and (b) variable, alternating biogenic tension. When a biogenic need has been satiated, the tension created by catabolism falls as the process of anabolism begins, but when an emotional need has been satiated, nothing happens to the tension level--it simply remains stable. Thus, the terms deprivation and satiation assume different meanings in different contexts: when the biogenic system is the frame of reference, deprivation means increased tension as a result of catabolism and satiation means reduced tension as a result of anabolism. However, when neurogenic or emotional needs are the frame, deprivation refers to the failure of expectations and satiation to the fulfillment of expectations. Thus, the management of neurogenic and emotional needs proceeds through cognitive means.

But how are emotive need states terminated, and emotional activity changed, if value acquisition does not reduce tension? A provisional answer to this question depends upon a coherent and sensible account of the process through which emotional needs are acquired in the first place. There are three general answers to this question: (a) emotional needs are innate, instinctual and exist in

a hierarchy common to all men, (b) they are learned through a process of social conditioning, and (c) they are imprinted. The first is the most frequent preference of "post facto theorists" who find intellectual security in the existence of "givens." Two analysts fall naturally into this category: Freud and Maslow. Freud believed that sex and death were the primary, natural and primordial sources of human activity, although the sexual emphasis of his writings places eros at the top of the list.[14] Maslow advances five general needs: physical, safety, love, self-esteem and self-actualization.[15] What is peculiar about Maslow's system is the developmental character of needs: before a higher need can be evoked, the need below it must be satiated. Thus, physical needs precede safety, safety precedes love, love precedes self-esteem and self-esteem precedes self-actualization. James Davies has employed Maslow's typology skillfully in the interpretation of the effects of physical deprivation on political

---

[14]For an excellent, succinct review of Freud, see Marx and Hillix, Chapter 9.

[15]A. H. Maslow, "A Theory of Human Motivation," Psychological Review, L (1943), 370-396.

behavior.[16] His major proposition holds that hunger, or the deprivation of food, encourages political apathy.

The innate need approach draws much of its empirical support from two independent sets of evidence: the Harlow experiments and observational data recorded by Spitz. In summarizing the meaning of these data, Davies states

> These clinical findings do not conclusively demonstrate that there is a social need, that there is an innate desire on the part of individuals from birth to associate with other human individuals, but at least they corroborate what is taken for granted by virtually all parents--that children need affection and that if the environment denies it, the consequences are catastrophic.[17]

In experiments with rhesus monkeys, Harlow discovered that infants deprived of their mothers at birth hugged gauze pads on the floors of their cages. In follow-up experiments, infants separated from their mothers at birth and placed in cages with lactating wire and/or terrycloth surrogates, exhibited distinct preference for the terrycloth surrogate, especially when frightened.[18] They also

---

[16]James Davies, Human Nature in Politics (New York: John Wiley and Son, 1963), pp. 11-13.

[17]Ibid., p. 152.

[18]Harry Harlow, "The Nature of Love," The American Psychologist, XIII (1958), 673-685.

displayed masochistic and apathetic behavior later. In most cases, females had no interest in sex, and when they became mothers through the experimenter's manipulation, they rejected their offspring.[19] The Spitz study reports that children reared in a foundling home (in the absence of their mothers) without active mother substitutes, and appropriate levels of environmental stimulation had a higher infant mortality rate (thirty-seven percent) and more emotional disorders than children reared under comparable circumstances, but with the active nurturance of their mothers and higher levels of environmental stimulation.[20]

Neither study offers any important proof for the existence of innate emotional needs. In fact, the Harlow data supports a number of contradictory hypotheses:

1) Deprivation of nurturance and of the opportunity to learn from a mother figure produces socially and emotionally retarded organisms incapable of supplying nurturance

---

[19]Harry and Margaret Harlow, "The Effect of Rearing Conditions on Behavior," Bulletin of the Menninger Clinic, XXVI (1962), 213-224.

[20]R. A. Spitz, "The Role of Ecological Factors in Emotional Development in Infancy," Child Development, XX (1949), 145-155.

and socializing activities to other organisms, thus transmitting the retardation to progeny,

2) the locus of an infant's interest in gauze pads and terrycloth is an innate neurogenic need for stimulation, of which the first positive manifestation is typically the clinging to environmental objects that provide "comfort contact,"

3) the infant's selection of the terrycloth substitute in preference to the lactating wire surrogate is a manifestation of the fact that the infant has learned that the terrycloth surrogate distributes more important values: comfort contact (stimulation), a mass to hide behind, and the feedback of warmth from its own body. The wire mother provided only milk, and therefore, was not chosen. Children typically choose their mothers over others in situations of uncertainty (i.e., the presence of a stranger),

4) sexual needs in male primates, including man, are innate and are either neurogenic or biogenic (perhaps both), while in females they are learned.[21]

---

[21]According to Fuller, "In human males, the accumulation of spermatozoa and of glandular secretion which make up seminal fluid provides an internal stimulus akin to the distension of the excretory organs by body wastes. The

The Spitz data offers even less support for the innate emotional need thesis. In the first place, all of the children in both groups were nurtured and stimulated, but with one group receiving more than the other. This suggests that (a) all of the children acquired an affection need through a mild form of imprinting as a result of initial exposure to nurturance, but that (b) the group with more mental disorders and higher mortality did not receive enough stimulation or affection subsequently to make them physically and emotionally healthy. In short, the susceptibility of the infants to mild imprinting produced needs which were not met equally; lack of subsequent nurturance produced "catastrophic" results. Thus, if an infant receives no human nurturance, no emotional needs will be acquired. The child without emotional needs will simply

---

ejaculation of semen reduces this drive stimulus, and it is built up again by secretory activity and storage of glandular products." He concludes that, "If the human female has achieved emancipation from hormonal control of sexual drives, and if she has no counterpart for the sexual tension produced in males by the accumulation of seminal fluid, we must look to learning and external stimuli as the source of her sexual motivation." John L. Fuller, Motivation: A Biological Perspective (New York: Random House, 1962), p. 31.

be emotionally retarded and the presentation or withdrawal of sentiments will be of no consequence. (The thirty-seven percent mortality rate was probably the result of an absence of stimulation, in which normal growth and development processes were interdicted.)

We may conclude, at least provisionally, that emotional needs are not innate, and that men come together exclusively to exchange values, and that in the process of exchange and socialization, they implant emotional needs in one another. Sooner or later, these needs generate independent tension, and the sentiments that created them must be continually re-supplied; if they are not, emotional disorders occur. The need for stimulation, on the other hand, is neurogenic and innate to the organism. Like emotional needs, it is not dependent upon a metabolic process. Rather, it is a necessary condition for sense maturation, and progressive sense maturation is the basis for the neurological integration of higher and more complex levels of development and learning. Deprivation of stimulation is probably more catastrophic than deprivation of affection. When both are absent, it is not difficult to understand the reasons for high infant mortality.

The most serious shortcoming of the learning hypothesis stems from its failure to present a coherent description of the process through which an infant, beginning life as a "blank slate," pyramids its biogenic and neurogenic needs into a complex bundle of emotional needs. In spite of this obvious limitation, it is probably the notion with the most consensual support among social scientists. Imprinting has been tested on a variety of mammals and fowl, but not human beings, although most developmental psychologists accept the proposition that the first months and years of life are the most important in shaping the personality. This would represent a weak sense of the imprinting hypothesis--the strong sense must be rejected automatically on the basis of its apparent ecological nature. Attachments to available environmental objects occur at critical periods immediately following birth. If the environment does not offer natural relationships, unnatural attachments imprint, producing such odd results as a gosling imprinting a green cube.[22] However, the cognitive capacities of a human infant are enormous when compared with those of a

---

[22]Fuller, p. 67.

gosling. Apparently, the gosling is unable to generalize its attachments to other organisms, while human infants can. Thus, the gosling is, so to speak, "stuck" with its first imprints, but the infant is capable of generalizing attachments to other beings. Imprinting in some degree is universal; any variation in strength is attributable to differential cognitive capacities and intelligence. In human learning, the tendency for an infant to learn quickly and permanently should properly be regarded as a weak form of imprinting.[23]

As a first approximation, emotional needs are acquired through a synthesis of learning and imprinting. Weak imprinting at an early age accounts for the fact that infants and children acquire needs more quickly and permanently than adolescents and adults. Conditioning accounts for the process of pyramiding innate needs into complex sets of emotional needs. The specific, elementary dynamic is the pairing of primary, biologically or neurologically significant values with secondary, surplus sentiments. In the

---

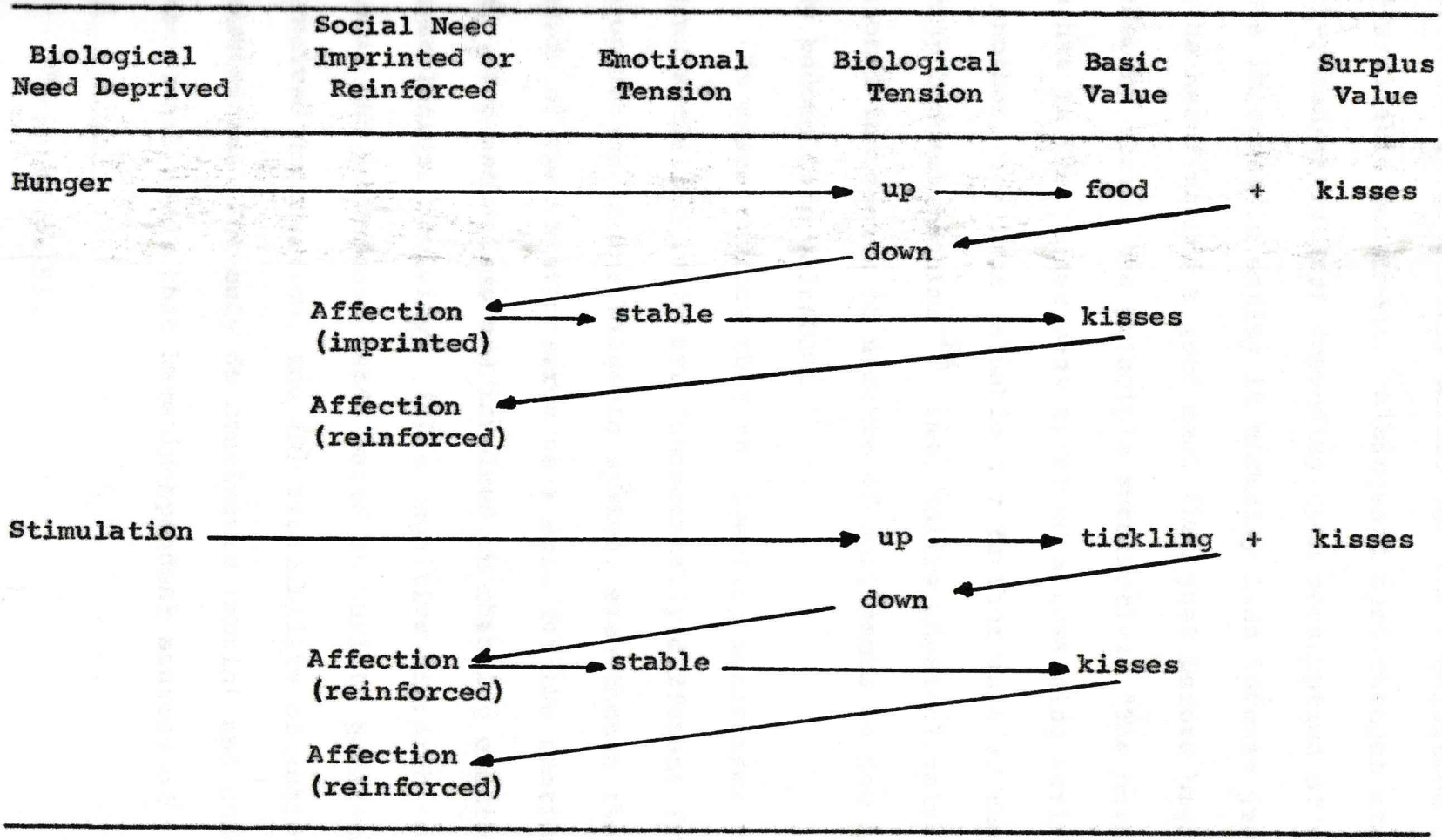
[23]J. P. Scott, "The Process of Socialization in Canine and Human Infants," Monographs of the Society for Research in Child Development, Vol. XXVIII (1963), No. 1.

process of meeting innate needs, the infant experiences patterns of surplus values, or sentiments, which inevitably accompany physical values. These may include a cooing voice, a firm hold, a rocking motion, a warm embrace or kiss, the stimulation of play, and probably most important of all, the presence of another human being. Eventually, through a process resembling classical conditioning the infant begins to associate the tension reduction produced by the intake of physical values or activity with the patterned presentation of sentiments; alternatively, the absence of sentiments is associated with the increasing tension of catabolism. The association, or more accurately the misassociation, of sentiments and biogenic tension states is a function of the limited discriminatory capacities of infants. The inability of an infant to accurately connect stimulus and response events leads to a generalized misattachment of biogenic responses to emotional values. Thus, a hungry or thirsty infant can often be placated for long periods by affection or play. Of course, at some point biogenic deprivation will become dire, and nothing short of the required physical value will have any effect on the infant. But at some point, the cognitive absence of sentiments becomes an independent source of tension in

its own right, capable of generating cognitive anxiety that is just as compelling as tension created by biogenic deprivation. The process may be schematized as in Figure 2.1.

So far, the explanation seems plausible, but how do emotional needs produce changes in social activity? The satiation of a biogenic need allows another deprived biogenic need to become the focus of value acquisition activity. But because no process analogous to biological metabolism is conceivable at the emotional level, the tension created by emotional needs must be more generalized. Tension remains specific to a particular need only as long as the acquisition of values affect the reduction of tension. Hunger remains specific to identifiable somatic feelings in the stomach because the consumption of food normally terminates such feelings. If this were not the case at the biogenic level, the brain would probably have no basis for interpreting the meaning of tension, and thus would probably not know exactly how to respond. The specificity of tension enables the organism to identify the values that are required, and on this basis, to efficiently select appropriate acquisition operants. Because the acquisition of sentiments has no impact on emotional tension, the quantum remains stable and attached to all emotional needs; thus,

Figure 2.1


Biological Need Deprived
Social Need Imprinted or Reinforced
Emotional Tension
Biological Tension
Basic Value
Surplus Value
Hunger
up
food
+
kisses
down
Affection (imprinted)
stable
kisses
Affection (reinforced)
Stimulation
up
tickling
+
kisses
down
Affection (reinforced)
stable
kisses
Affection (reinforced)

the organism is constantly poised for the acquisition of every available sentiment. A biogenic need changes states (deprivation/satiation) depending upon consumption of values; a man's interest in eating is normally less intense just after he has finished a good meal than just before beginning it. Homans states the principle succinctly: "The more often a man has in the recent past received a rewarding activity from another, the less valuable any further unit of that activity becomes to him."[24] But, unlike physical values, additional increments or amounts of sentiments do not necessarily become less valuable.

It seems obvious that the specific mechanisms for changing social activity are fundamentally different from those operating in the biogenic system, even though the processes of that system serve as a mold for the emotional system. Two mechanisms are involved in changing emotional and neurological activity: (a) a cognitive hierarchy of emotional and neurogenic needs based on anxiety generated by perceived deprivation, and (b) availability of activities and sentiments. Not only do sentiments imprint and condition emotional needs that have independent sources of

---

[24]Homans, p. 55.

tension, but they build up a cognitive set that predicts acquisition in the future on a particular schedule. If the prediction is incorrect and deprivation occurs, a new form of cognitive tension emerges: anxiety. Anxiety determines the ranking of neurogenic and emotional needs; the ranking, in turn, allows the organism to focus most of its energy or activity (or an appropriate amount of it) on the acquisition of a particular activity or sentiment. For example, suppose my expectations about affection are not met, and I am thrown into a state of high anxiety. If the anxiety reaches a particular level, in this case unknown, I will probably experience a temporary rearrangement of my needs with affection at the top of the rank order. My activity will, at this point, become like a laser beam, focused directly and intensely upon the problem of acquiring affection. When affection has been acquired and my expectations concerning affection have finally been met, anxiety falls, and my needs are deranked and become equal again. In effect, anxiety produces a vertical distribution of needs and reduction of anxiety reproduces the normal horizontal distribution. During the period when affection interests me intensely, my other emotional needs do not disappear--they are merely devalued or temporarily forgotten. In the non-anxiety condition (i.e.,

in which emotional needs have been met as expected), the primary criterion for change in activity is the perceived opportunity for acquisition. The mere existence of an acquisition opportunity is sufficient to elicit the activity. If anything, emotional needs are cast in a mold similar to neurogenic needs: neurological activity is continuously satisfying, and whenever available, will be selected.[25]

A Typology

There is no real consensus in psychology on a taxanomic system for classifying needs. Most systems consist of constructs drawn from subjective experience or observation, on the basis of common sense. Maslow's list is surprisingly short while Murray's is extraordinarily long. To avoid the conceptual difficulties of reductionism, we will adopt the longer list as a first approximation. The following typology attempts to classify the known constructs from Murray's list, and the lists of other theorists, on the basis of functional distinctions:

---

[25]James S. Olds, "Hypothalamic Substrates of Reward," Physiology Review, XLII (1962), 554-604.

Figure 2.2[a]

Innate

I. Biogenic

Survival, Health and Propagation Functions
- oxygen (Fuller)
- water "
- food "
- sleep "
- homeostasis (Cannon)
- excretion (Fuller)
- sex (male) "

II. Neurogenic

Sensory Maturation Functions
- stimulation (Harlow)
- exploration (Fuller)

Sensory, Motor and Perceptual Coordination and Integration Functions
- order (Murray)
- play "
- manipulation (Harlow)

Acquired

I. Emotional

Stability Functions
- conservance (Murray)
- construction "
- affiliation "
- acquisition "

Figure 2.2 (Continued)

Perceptual Approach Functions
- similance (Murray)
- sentience "
- cognizance "
- analysis/synthesis

Perceptual Avoidance Functions
- withdrawal
- fantasy
- sleep

Interaction Approach Functions
- exhibition (Murray)
- deference "
- abasement "
- superiority "
- dominance "
- counteraction "
- succorance "
- exposition "

Interaction Avoidance Functions
- rejection (Murray)
- blamavoidance "
- aggression "
- contrariance "
- autonomy "
- defendence "
- inviolancy "

Success Functions
- achievement (McClelland)
- status (Ardrey)
- competence (White)
- recognition (Murray)
- infavoidance "

Figure 2.2 (continued)

Social Propagation Functions
sex (female)
nurturance (Murray)
generativity (Erikson)

---

[a]Sources: John L. Fuller, Motivation: A Biological Perspective (New York: Random House, 1962); W. B. Cannon, Bodily Changes in Pain, Hunger, Fear and Rage (New York: Appleton-Century-Crofts, 1929); Harry and Margaret Harlow, "The Effect of Rearing Conditions on Behavior," Bulletin of the Menninger Clinic, Vol. XXVI (1962); Henry A. Murray, et al., Explorations in Personality (New York: Oxford University Press, 1938); David C. McClelland, et al., The Achievement Motive (New York: Appleton-Century-Crofts, 1953); Robert Ardrey, African Genesis (New York: Dell Publishing Co., 1961); Robert W. White, "Motivation Reconsidered: The Concept of Competence," The Psychological Review, LXVI (1959), 297-333; Erik H. Erikson, Childhood and Society (New York: W. W. Norton, 1950).

Development is a function of "the interaction of a biologically ready child with an appropriate environment."[26] Each developmental gain is the product of a prior development; unless the prior development occurs, subsequent development may not. The two cornerstones of development are the sensory and cortical capacities of the organism. Sensory equipment requires maturation, or training, in

---

[26]Bernard Berelson and Gary Steiner, Human Behavior: An Inventory of Scientific Findings (New York: Harcourt, Brace and World, 1964), p. 55.

order to achieve maximum sensitivity. During the process of sensory training, the conditions of sensory coordination and differentiation which lead to successively more refined and accurate approximations of reality and use of motor skills make it possible for the brain to integrate the new abilities into more complex kinds of behavior. The needs for stimulation and exploration produce a continuous drive for sensory stimulation. Over time, raw data are aggregated perceptually in more refined ways and these are attached to more refined motor developments; over time, the organism is able to make more and more refined and accurate operations on the environment. Development occurs in response to continual interactions between the motor system and the brain. Doman and Delacato, for example, have successfully taught mentally retarded and brain damaged children to crawl, walk, and quite unexpectedly, to talk.[27] The act of creeping teaches the brain to integrate the motor and perceptual functions required for walking; walking teaches the brain to integrate the cognitive and vocal elements necessary for speech. In effect, development

---

[27]Glenn Doman and Carl Delacato, "Train Your Baby to Be a Genius," McCall's Magazine, March, 1965, p. 65.

beyond walking is impossible without the refined discrimination that only the use of symbols can offer. Manipulation of objects, random play, structured games, experimental operations in unstructured situations sharpen the senses, test new operants, and produce higher levels of sensory and motor coordination from which adaptive repertoires may be drawn. At a totally functional level, the biological survival and health of an organism depends upon the intake of particular kinds of values in homeostatic proportions; this, in turn, depends upon the existence of innate, biogenic supply needs. Survival and health are equally dependent upon the capacity of the organism to excrete waste, the result of the need for elimination. Finally, the male sex need provides the critical impetus for survival of the species.

Because environments change, creating risk and uncertainty in the pursuit of values, there exists in human beings a generalized need for stability. Specifically, stability may be enhanced by individual needs to conserve existing values, to construct routine and controlled patterns of exchange, allocation and production, to affiliate with other people in stable value markets called groups, and to simply acquire values. Accurate value acquisition

depends partly upon accurate information about the environment: men have perceptual needs. Reality may be approached or avoided perceptually; perceptual approach is obviously the state of affairs that is most likely to lead to accurate transactions with the environment, but perceptual avoidance may perform important adjustive functions for the organism in the short-run and may therefore be just as essential as perceptual approach to the emotional integration of the organism. Perceptual approach may be facilitated by a need to emulate, understand, explore, be aware of reality, order reality systematically, manipulate symbols in analysis and synthesis of reality. Perceptual avoidance may be enhanced by a need to withdraw, or cut the self off from available stimuli, to engage in fantasy and dreams, to seek refuge in abnormal amounts of sleep, to fly from reality on the wings of drugs or alcohol, or to divert unpleasant stimuli by exposing to more reinforcing information (books and/or the theater). The person skeptical about the value of this work might include theory-building. Because all physical values are classified perceptually as property, the satiation of some biogenic needs is problematic, and depends primarily upon participation in an exchange process; the acquisition of

sentiments is equally dependent upon interaction, not because they are classified as property, but because they are transmitted by symbols, and must therefore be acquired from other people. Values of any kind normally cannot be acquired except through interaction. Like perception, interaction may be approached or avoided. Interaction approach represents an interest in getting values, while avoidance implies a desire to keep from giving them. Interaction approach can be facilitated directly by a need for attention, to defer to others, to submit to others, to dominate or control others, to choose difficult tasks, to require help, or to provide information for others. Interaction can be avoided by needs to be exclusive, avoid responsibility, injure others physically or emotionally, be contrary, become autonomous from other people, overpower others in various ways, and be morally righteous. The function of success needs is to provide the organism with the ego-control mechanisms necessary for coping adequately with the environment and executing successful operations with important tasks. As we shall see in a later chapter, success is the technique for assigning status within the various stratification systems of society and is related directly to the capacity to deal effectively with the

environment. Success may occur as a result of a need for approval, respect or deference, control or efficacy (competence),[28] attention or praise, and avoidance of failure. Finally, the survival of society depends upon the propagation of culture. The capacity for females to learn a sexual role is a powerful incentive for biological propagation, ceteris paribus (i.e., the absence of conscious birth control). The rearing of offsprings requires the internalization in both males and females of nurturance needs; the transmission of basic culture is, quite incidentally, assured by the nurturance relationship between parent and child. The transmission of the more sophisticated elements of culture depend upon the internalization in some members of society of generativity needs.

Fifty-four biogenic, neurogenic (innate) and emotional (acquired) needs is obviously a far greater number than any single human being actually possesses. Fourteen

---

[28]Robert W. White, "Motivation Reconsidered: The Concept of Competence," The Psychological Review, LXVI (1959), 297-333. The concept of competence includes "visual exploration, grasping, crawling, and walking, attention and perception, language and thinking, exploring novel objects and places, manipulating the surroundings, and producing effective changes in the environment." (p.329) The basis for competence is the neurogenic drive for exploration, stimulation and manipulation.

of those needs are biogenic; forty are emotional. While we may grant that virtually every human being may have at least twelve of the fourteen biogenic needs, it is doubtful that any single individual has any more than fifteen or twenty emotional needs, if that. Although the matter can only be settled empirically, we may hypothesize on the basis of subjective observation that the average number is less than ten. Emotional need syndromes may therefore vary tremendously from person to person. There are a great number of possible combinations or syndromes, and the fact that any one need may provide values sufficient to fulfill the general needs (stability, perception, interaction, success and social propagation) means that no particular syndrome is logically more probable than any other, although certain syndromes may occur more frequently as a result of the translation of the needs of the social system into socialization practice.[29] It is also probable that development demands the gradual extinction of some needs and the evolution of others. Perceptual needs are undoubtedly of extraordinary importance for a developing child or a college student;

---

[29]Melford Spiro, "Social Systems, Personality and Functional Analysis," Studying Personality Cross-Culturally, ed. Bert Kaplan (Evanston, Illinois: Row, Peterson and Company, 1961), pp. 93-128.

interaction needs may become paramount in early adulthood, but decline with age; success motives may be particularly important during the transition between youth and middle age; social propagation, in particular nurturance and generativity, may be strong during adolescence, decline during middle age, and become salient again in old age. Biological sex drives probably decline in men with age; the need for manipulation, stimulation, play and exploration are undoubtedly stronger in youth than in old age.

Important corroborative support for the proposition that needs evolve into discrete, but patterned syndromes emerges from research reported by Morris Stein. Employing twenty of Murray's need constructs, Stein discovered that needs fall into a limited set of hierarchically arranged patterns: four in a population of eighty Peace Corps volunteers and five in a population of one hundred sixteen Ph.D. chemists. A number of interesting observations can be drawn from the tables. First, interaction and perceptual avoidance needs tend to fall near the bottom of the hierarchies; had respondents been asked to formulate their own need lists and then rank those chosen, instead of being asked to rank a prepared list of twenty, those near the bottom probably would not have appeared. Second, chemists have fundamentally

Figure 2.1[a]

TABLE 1

NEED HIERARCHIES AMONG THE FIVE TYPES
FOUND IN THE CHEMIST POPULATION

Type A	Type B	Type C	Type D	Type E
Achievement	Affiliation	Achievement	Achievement	Achievement
Affiliation	Blamavoidance	Counteraction	Affiliation	Counteraction
Play	Counteraction	Autonomy	Counteraction	Affiliation
Counteraction	Order	Aggression	Order	Autonomy
Sentience	Achievement	Dominance	Nurturance	Nurturance
Dominance	Deference	Defendance	Defendance	Order
Order	Infavoidance	Rejection	Dominance	Sentience
Exhibition	Harmavoidance	Order	Exhibition	Sex
Autonomy	Nurturance	Affiliation	Autonomy	Succorance
Sex	Play	Sex	Deference	Deference
Deference	Defendance	Harmavoidance	Aggression	Dominance
Nurturance	Autonomy	Infavoidance	Play	Defendance
Harmavoidance	Abasement	Play	Harmavoidance	Infavoidance
Defendance	Sentience	Exhibition	Succorance	Blamavoidance
[Aggression]*	Sex	Blamavoidance	Infavoidance	Play
[Infavoidance]	Succorance	Sentience	Blamavoidance	Rejection
Rejection	Exhibition	Succorance	Sentience	Aggression
Blamavoidance	Rejection	Deference	Rejection	Abasement
Succorance	Dominance	Nurturance	Abasement	Harmavoidance
Abasement	Aggression	Abasement	Sex	Exhibition

*The bracketed needs represent ties.

Figure 2.1 (Continued)

TABLE 2

NEED HIERARCHIES AMONG THE FOUR TYPES FOUND IN THE PEACE CORPS POPULATION

Type I	Type II	Type III	Type IV
Affiliation	Affiliation	Achievement	Nurturance
Nurturance	Achievement	Affiliation	Play
Counteraction	Sentience	Counteraction	Sex
Achievement	Sex	Dominance	Affiliation
Deference	Autonomy	Nurturance	Autonomy
Sex	Counteraction	Order	[Sentience]*
Order	Nurturance	Exhibition	[Succorance]
Succorance	Play	Sex	Exhibition
Blamavoidance	Dominance	Deference	Counteraction
Play	Rejection	Defendance	Order
Dominance	Succorance	Play	Abasement
Harmavoidance	Order	[Aggression]*	Defendance
Infavoidance	Deference	[Autonomy]	Deference
Sentience	Blamavoidance	Sentience	Dominance
Exhibition	[Harmavoidance]*	Rejection	Infavoidance
Defendance	[Defendance]	Succorance	Achievement
Autonomy	Aggression	Harmavoidance	Blamavoidance
Rejection	Infavoidance	Abasement	Harmavoidance
Abasement	Exhibition	Infavoidance	Aggression
Aggression	Abasement	Blamavoidance	Rejection

*The bracketed needs represent ties.

[a]Morris I. Stein, "Explorations in Typology," in The Study of Lives, ed. Robert W. White (Englewood Cliffs, New Jersey: Prentice Hall, 1963), pp. 286-287.

different types than the Peace Corps volunteers. Sex, in the chemist population, is ranked 10th, 15th, 10th, 20th, and 8th respectively, while in the Peace Corps population it is ranked 6th, 4th, 8th, and 3rd respectively. Among all types except IV in the Peace Corps population, stability (affiliation), interaction (counteraction) and success needs (achievement) form a relatively tight syndrome at the top of the typology. The agglutination of affiliation, counteraction and achievement undoubtedly reflects in the internalization of universal problems of aggregate life: how to provide the greatest opportunities to acquire values (affiliation), how to overcome the difficulties of maintaining viable group behavior (counteraction), and how to allocate status (achievement). This particular syndrome, it should be noted, is very congenial to the needs of a capitalistic economy. The difference in ranking of sex in the two populations is probably a manifestation of differences in age: the younger Peace Corps volunteers have stronger sexual drives than the older Ph.D. chemists.

Motives: Aggregation of Needs

The final task of our theory of motivation was to explain how a large number of needs, at least twenty biogenic,

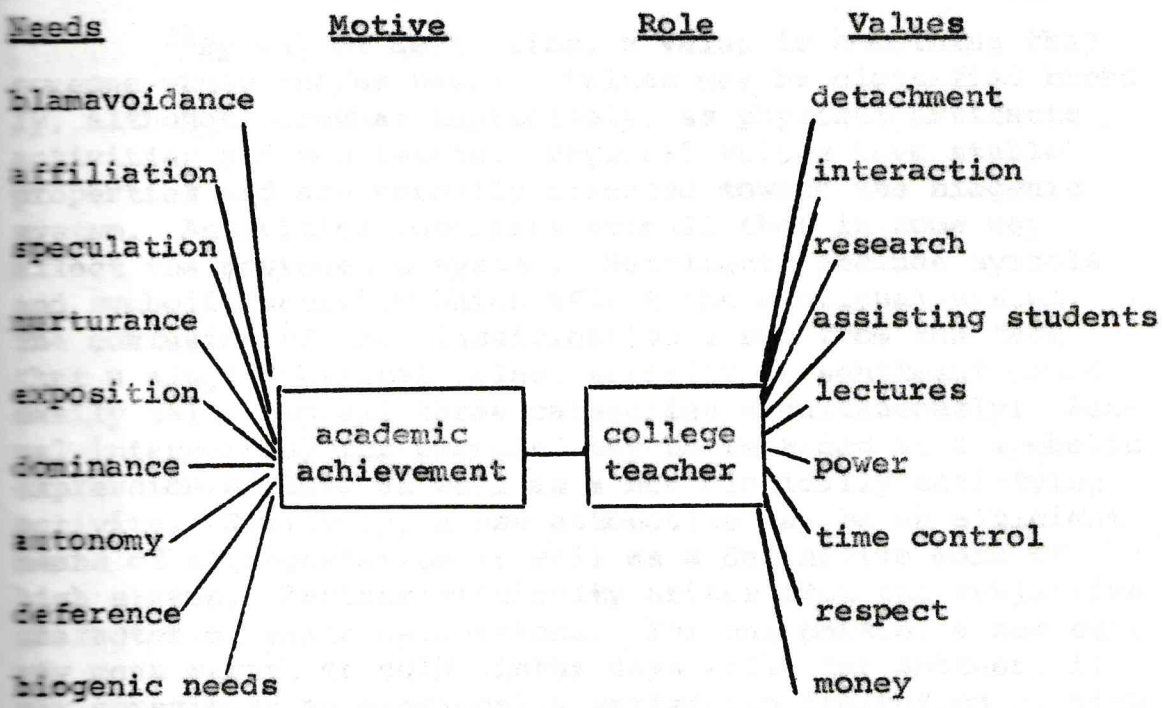
neurogenic and emotional needs, can be met continuously by a smaller number of role-oriented activities within the social system. In effect, how can the performance of a limited number of social roles gratify a large number of needs? The answer is given by introducing the construct "motive." The function of a motive is to aggregate the right needs into a small number of units congruent with available values. The roles of society aggregate specific sets of values. The job of the motive is to link needs efficiently to the values offered by available roles. If, for example, we examine the role "professor," we discover that a specific set of values are available: prestigious interaction; exaggerated deference from manipulative students; within limits, control over the use of time; arbitrary power over students; opportunities for self-expression; opportunity to help others (students); chances to explore reality; detachment from the normal political responsibilities of society. Thus, we may visualize the set of connections between needs, motives, roles and values, as shown in Figure 2.4. The major institutions of society are complex networks of functionally integrated roles; each role offers a specific set of values as incentives for role playing. The capacity of a social system to survive depends

upon how well the values distributed by roles meet the needs of people available to play them. As Melford Spiro puts it:

> Although social roles are prescribed by the cultural heritage, their performance is motivated by the expectation of satisfying personality needs. Though these roles must be performed so that their functions for society can be served, individuals desire to perform them because personal functions are thereby served.[30]

The function of a motive is to cognitively select that line of activity most likely to lead to the performance of roles that will provide the maximum satisfaction of all needs.

Figure 2.4



[30] Spiro, p. 106.

Scarcity

All values are scarce.[31] The most fundamental source of worth for any value is need: worth is a function of demand. Price in aggregate situations depends upon supply, part of which depends upon the character of other demands and part of which results from the empirical distribution and availability of the value. Distribution and availability are intimately affected by territoriality, defined among most vertebrates as the possession or control of terrain. Among

---

[31]By way of definition, a value is something that someone wants and/or needs. Values may be classified broadly, although somewhat imprecisely, as physical artifacts, activities and sentiments. Physical values have stable properties and are normally oriented toward the biogenic system. Activities encompass stimuli that in some way affect the neurogenic system. Sentiments include symbols and symbolic activity which affect the emotional system. The confusion of the classification stems from the fact that a single physical value, activity or sentiment could easily fall into all three categories simultaneously. Sexual intercourse, for example, may be regarded as a symbolic expression of love as well as a neurologically satisfying activity. Similarly, a new automobile may be an efficient means of transportation as well as a definitive mark of high status. Another difficulty arises from the subjective character of value definitions. For one person, a new suit may mean warmth on cold Winter days while for another, it may constitute an emotionally satisfying indication of high style. In aggregate statements, statistical distributions of valuation are the only reliable guide to value preferences. When elementary behavior is the frame of reference, only the subjective definitions of the parties to interaction count.

humans all values within a domain, if they are perceived as even potential sources of energy, become part of the domain. Man, of course, is distinguished from all other species by his capacity to make some use of virtually all things. His most common perceptual orientation is to equate occupation of terrain with the ownership of all values on or within that ground, including other members of the species. The source of this proclivity to extend the concept of ownership to all values is unclear, but the latest "authoritative" interpretation of man's genealogy may be of some importance in providing an understandable explanation. Presumably, we are descendant from a small, South African ape, the predatory australopithecus africanus. It is thought that sometime after the transition to a bipedal position, increasing aridity forced the ape to rely more and more on meat as a source of nutrition. Dependence on meat and the freeing of the hands combined to produce the use of weapons. Initially, the bones of other animals were used as weapons, but eventually weaponry was improved by craftsmanship. Skill in the use of weapons produced a constant stimulation of those areas of the brain that control leg, arm and hand movements. This stimulation probably spilled over to affect areas which control lip, tongue and mouth movements. Cortical maps indicate

that vocal capacity and the ability to control the limbs reside in contiguous areas of the brain.[32] Thus, the use of weapons brought vocal capacity into being, and vocal capacity made symbolization and communication of symbols possible. From this point on, history is the history of culture. Territoriality was fused in this first critical period of human development with the two really important constituents of cognitive behavior, symbols and weaponry. Symbols made communication possible, and communication improved social cohesion and adaptation within territorial units. The combination of symbols, territory and weapons generated a universal and irreversible cognitive orientation toward reality in which all environmental objects were regarded as either values to be acquired or as means of acquiring them. In effect, every object, including the values used by other species and the other species themselves, became potential sources of energy, or a way of getting and converting energy. The capacity to view reality in this way was probably one of the single most significant achievements of human evolution, and next to dominance, may have been the source of the superior evolutionary potential

---

[32]Berelson and Steiner, p. 170.

which made it possible for man to rise above all other competitive species.

In human society, territoriality is a powerful force limiting the availability of values. If all territory is spoken for, and if all values in or on territory are automatically included in the concept of ownership, then it follows that the most formidable obstacle to acquiring values is the consent of the person who "owns" them. The fact that all values are property implies the need for an exchange of values as a technique of value acquisition. If getting a value depends upon giving one, rather than simply taking one, another vital dimension is added to scarcity: the cost of exchange. Everything latently costs something; roots acquired from the ground cost the energy of finding them and digging them up. While roots may have a relatively broad distribution unaffected by barriers, the requirement of exchange assures that the exchange of values will be difficult. For example, suppose that I want a value from another person, and decide in advance that I am willing to offer a value of my own in return. My opportunity to acquire the value is nil if the person possessing it is not willing to give it up, or chooses not to accept the value I want to give him.

Thus, the availability of a value under these conditions depends upon

a willingness to exchange values,

a mutual demand for the particular values possessed,

and a mutual supply of exactly the values desired by each of the parties to the exchange.

The probability of any interaction at random meeting each of these conditions is low, especially where the number and kinds of values and needs become proliferate.

The final element in scarcity is the cost of search and production. Any value consumed consistently and regularly must be constantly replenished, and this may entail both search and production. Search activity costs something in terms of the activities that must be foregone in order to engage in the search; production is costly for precisely the same reason. In general, the higher the cost of finding, producing and exchanging a value, the greater its overall worth. Scarcity, to summarize, is a function of

the need or desire for a value,

the costs of search and production,

availability,

and the cost of exchange.

The bio-neurological nature of living organisms decrees that those physical values and activities most relevant to survival and development will, statistically at least, become the core of the exchange process. In general, some physical values and activities will be more important than others owing to their relative scarcity, and physical values will be objectively more important than sentiments. Sentiments are obviously less costly because their worth is a function of the meanings assigned to the symbols used to transmit them by those who receive them; change the meanings of the symbols, or the receiver, and you effectively change the worth of the sentiment. The chimerical nature of sentiments makes their valuation far more dependent upon subjective states than is the case with physical values. Objectively, they cost less than physical values because they are more abundant and because most people are capable of generating and transmitting the symbols that define them. If sentiments cost less, and if, as a rule, men attempt to exchange their least important values for the values they need, then it follows that there should be a bias in all human interaction toward the substitution of sentiments for physical values and activities in exchange situations. Much of the ritualistic symbolic